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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,550	08/04/2006	Florent Chaffotte	Serie 6322	2099

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Intellectual Property
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EXAMINER	
NGUYEN, COLETTE B	
ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/565,550	CHAFFOTTE ET AL.	
	Examiner	Art Unit	
	COLETTE NGUYEN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *21 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7,8 and 10-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7,8 and 10-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 7 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Sype et al. (US2002/014589) Sype et al teaches a method and apparatus for

recycling a quenching gas, such as helium, to be used with a treating gas such as a carburizing gas, for the treating of components in an atmospheric furnace. Sype's invention comprises: a quenching chamber (equivalent to V1 as claimed) coupled to a gas recovery device (equivalent to V2 as claimed) adapted for receiving spent treating gas and quenching gas which can be recycled between the quenching chamber and the recovery device (para 20). He further specifies an option of a by-passing loop by citing that " a separate vacuum pump could be used in a side process connected to duct 24 before valve 23 to evacuate quenching chamber 20 so that a greater percentage of quenching gas is recovered (para 42). He further discloses many options of modifications that can be made such as the set up of the compressors in a parallel or stacking configuration (para 43), the furnace (para 41), a separate vacuum pump at the side stream (para 42) same as the claimed vacuum pump P10 and the option of the installation of a receiver at the side stream for helium recovery (para 460). He does not have a intermediate tank on the side stream, however it would have been obvious for one of ordinary skill in the art at the time of the invention to install a tank, as a surge capacity, especially in a confined space, to use for balancing the pressure in the system, especially in a continuous process or where space is limited. Head tanks or intermediated tanks are well known solutions in process design as they are treated as "pipes" with storage capabilities. Furthermore, the system could run continuously therefore helium content of the quenching gas would increase, therefore resulting in a smaller compressor requirement (para 50).

5. Claims 10 to 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Sype as applied to claim 7 above, and further in view of Bowe (In "Helium recovery and recycling makes Good Business Sense" by Donald J. Bowe, Air products & Chemicals inc., Allentown, Pa.). Sype teaches a method of recycling quenching gas, of at least one gas such as helium, however he does not specifically teaches how a gas mixture is controlled if used. Bowe teaches a generic helium recovery system to be used in any process with recycled helium stored independently from a virgin helium supply for back up with analyzer and control valves for mixing and make-up. It would have been obvious for one of an ordinary skill in the art to have separated tanks for the different gases used for quenching, and then add them proportionally as required by the in line analyzer to a dedicated head tank where the filling can be controlled in parallel and independently from the quenching sequences with computerized control as mentioned by Bowe of Air products to save time.

6. **Claims 7 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Sype et al. (US2002/014589) , in view of McKay (US 4,298,190). Sype discloses a method of gas quenching wherein the quenching gas is recycled and a process involves an installation of a by-pass loop where the gas can be recycled, purified and optionally stored in a receiver which can provide means for continuous process. Sype et al teaches a method and apparatus for recycling a quenching gas, such as helium, to be used with a treating gas such as a carburizing gas, for the treating of components in an atmospheric furnace. Sype's invention comprises: a quenching chamber (equivalent to V1 as claimed) coupled to a gas recovery device (equivalent to

V2 as claimed) adapted for receiving spent treating gas and quenching gas which can be recycled between the quenching chamber and the recovery device (para 20). He further specifies an option of a by-passing loop by citing that " a separate vacuum pump could be used in a side process connected to duct 24 before valve 23 to evacuate quenching chamber 20 so that a greater percentage of quenching gas is recovered (para 42). He further discloses many options of modifications that can be made such as the set up of the compressors in a parallel or stacking configuration (para 43), the furnace (para 41), a separate vacuum pump at the side stream (para 42) same as the claimed vacuum pump P10 and the option of the installation of a receiver at the side stream for helium recovery (para 460). He does not have a intermediate tank on the side stream. McKay, in his invention of a method to reduce gas of metal ores, clearly explains the reasons for side stream gas recovery. (Col 7, ln14, " In general, the use of the out-of line cooling reactor increases the operating flexibility of the system since it permits independent control of both the gas flow rate and gas composition in the cooling gas loop"). McKay mentions about reactor, however it would have been obvious for one of ordinary skill in the art to learn from McKay's teaching and modify Sype et al.'s quenching method by adding an intermediate tank instead of a reactor at the by-pass loop with control devices such as control valves, pressure sensors, pumps, flow control, etc. with process software to balance the pressure of the system.

7. Claims 10 to 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Sype in view of McKay as applied to claim 7 above, and further in view of Bowe (In "Helium recovery and recycling makes Good Business Sense" by Donald J.

Bowe, Air products & Chemicals inc., Allentown, Pa.). Sype teaches a method of recycling quenching gas, of at least one gas such as helium, however he does not specifically teaches how a gas mixture is controlled if used. Bowe teaches a generic helium recovery system to be used in any process with recycled helium stored independently from a virgin helium supply for back up with analyzer and control valves for mixing and make-up. It would have been obvious for one of an ordinary skill in the art to have separated tanks for the different gases used for quenching, and then add them proportionally as required by the in line analyzer to a dedicated head tank where the filling can be controlled in parallel and independently from the quenching sequences with computerized control as mentioned by Bowe of Air products to save time.

Response to Arguments

8. Applicant's arguments with respect to claims 7 and 8 which were rejected based on 35 U.S.C 102(b) over Sype have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLETTE NGUYEN whose telephone number is (571)270-5831. The examiner can normally be reached on Monday-Thursday, 10:00-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Mayes can be reached on (571)-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLETTE NGUYEN/
Examiner, Art Unit 1793

CN
February 4, 2009

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793